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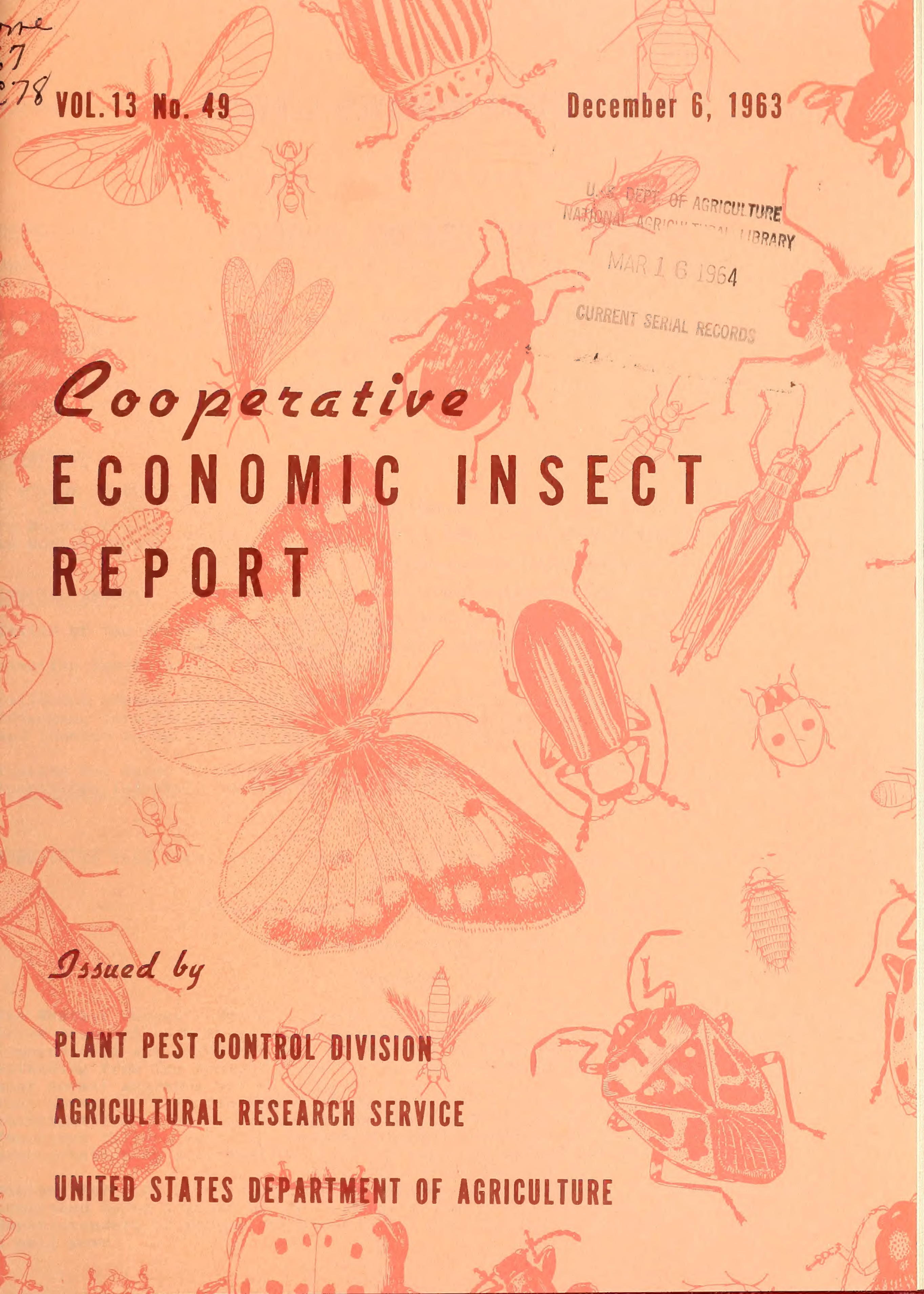

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 13 December 6, 1963 Number 49

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Apparent buildup of GREENBUG noted in barley fields in areas of Eddy County, New Mexico. (p. 1373). WINTER GRAIN MITE active in Oklahoma. (p. 1374).

HICKORY SHUCKWORM light to heavy on pecan nuts in Arkansas. Gravid MEXICAN FRUIT FLY trapped November 12 near Roma in Starr County, Texas; first specimen of season in lower Rio Grande Valley. (p. 1374).

TOMATO FRUITWORM, FALL ARMYWORM and CABBAGE LOOPER continue to damage lettuce in Arizona; controls necessary. (p. 1375).

DETECTION

A SCARAB (*Onthophagus sagittarius* (F.)) recorded for first time in Hawaii. (p. 1381). New county records reported were a BROWN SPIDER (*Loxosceles reculsa*) in Monroe County, Illinois (p. 1377), and OLD-HOUSE BORER (*Hylotrupes bajulus*) in Mobile County, Alabama (p. 1378).

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 1379).

Hawaiian Insect Notes. (p. 1381).

Estimated Losses and Production Costs Attributed to Insects and Related Arthropods Attacking Corn for Grain, Wheat, Oats, Soybeans for Beans, Hay (All), Sugar Beets and Tobacco in Ohio During 1962. (pp. 1382-1388).

Insects Not Known to Occur in the United States (safflower fruit fly, *Acanthiophilus eluta* (Meigen)). (p. 1389).

Reports in this issue are for week ending November 29, unless otherwise indicated.

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WEATHER BUREAU 30-DAY OUTLOOK

DECEMBER 1963

The Weather Bureau's 30-day outlook for December calls for temperatures to average below seasonal normals in the southeast quadrant of the Nation. Above normal temperatures are predicted for New England, the West Coast, and a large area extending from the Western Lakes to the Northern Rockies. In regions not mentioned near normal averages are in prospect. Precipitation is expected to be greater than normal in Atlantic and Gulf Coastal States. Near normal amounts are anticipated in a zone extending from the Eastern Lakes through the Ohio and Tennessee Valleys into the Southern Plains. In unspecified areas near normal precipitation is indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING DECEMBER 6

High pressure and fair weather prevailed over most of the Nation at the beginning of the week. There were a few exceptions. A storm approached the north Pacific coast producing several inches of rain at Tatoosh Island, Washington, during the first few days. Scattered snow flurries fell over the southern Rocky Mountains and parts of the upper Mississippi River Valley. A cold front lay across southern Florida. By about midweek, a wave had developed over the Gulf of Mexico and was bringing generous rains to south Texas and the upper coast. This storm intensified, moved northeastward, and by midweek was bringing heavy downpours over much of southeastern United States. Jackson, Mississippi, and Montgomery, Alabama, were among the locations that received more than 2 inches of rain on Thanksgiving day. Another storm, which developed north of Montana, moved quickly to near Winnipeg, Canada, on Wednesday and continued eastward to Sault Ste. Marie, Michigan, on Thursday. This storm produced considerable cloudiness, a few snow flurries, and strong gusty winds. By Friday morning, high pressure and fair weather prevailed over the western two-thirds of the country and a deepening storm centered over West Virginia brought heavy rains to the Atlantic Coastal States. Cold air, on the back side of the storm, produced snow in the southern Appalachians as far south as Knoxville, Tennessee. Most of the eastern third of the Nation received generous rains as the storm intensified and moved northeastward and another storm moved eastward across northern Lake Superior. Most of the northeastern quarter of the Nation received rain or snow over the weekend. Snow accumulated to 9 inches in northern Pennsylvania.

At the end of the week, a high pressure area was centered over the northern Rocky Mountains and temperatures dropped to 7° below zero at International Falls, Minnesota. Subzero temperatures were also registered in Wyoming and South Dakota. Temperatures dropped to freezing or lower in the Southeast in connection with a high pressure area centered near Jacksonville, Florida. Tallahassee, Florida, registered 28° Sunday morning and again on Monday.

Temperatures during the week averaged slightly below normal over parts of Washington, Oregon, and California, over the southern Appalachians, and from southeastern New Mexico eastward to Mississippi. Elsewhere, temperatures averaged above normal. Temperature departures ranged from -6° at Brownsville and Laredo, Texas, to +13° at Glasgow, Montana. Some generous rains fell in northwestern Washington. Tatoosh Island, Washington, received 3.38 inches during the week. Several stations in southern Texas received more than 1 inch of rain. No rain of importance fell from California to Wisconsin and Illinois. A few eastern areas received more than 2 inches. One of these stretched from eastern Alabama to southwestern West Virginia. Rainfall also exceeded 2 inches over eastern New England. There was considerable fog in the valleys in the northern Rocky Mountains. (Summary supplied by U.S. Weather Bureau.)

CEREAL AND FORAGE INSECTS

PEA APHID (Acyrthosiphon pisum) - NEW MEXICO - Light in most alfalfa fields of southern counties; moderate to heavy in alfalfa at Belen, Valencia County, and Artesia, Eddy County. (N. M. Coop. Rpt.). OKLAHOMA - Light numbers becoming active in alfalfa fields checked in Payne, Noble and Kay Counties. Reported active in Pawnee and Muskogee Counties. (Okla. Coop. Sur.). OHIO - Ranged 5-10 per 50 sweeps in field of red clover near Bucyrus, Crawford County; none found in adjacent alfalfafield. (Lyon). WISCONSIN - Decreased noticeably; highest population observed averaged 1 per sweep. Few alate viviparae containing embryos noted, although most were apterous oviparae. (Wis. Ins. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Light on alfalfa fields at Los Lunas and Belen, Valencia County. (N. M. Coop. Rpt.). OKLAHOMA - Almost nonexistent in alfalfa in Payne, Noble and Kay Counties compared with counts before general rains in area past week. Light in Lincoln, Cleveland, Greer, Kingfisher and Garvin Counties. (Okla. Coop. Sur.). NEBRASKA - Sexual forms found for the first time in Brown, Chase, Cherry, Cuming, Dakota, Dawson, Dixon, Frontier, Hayes, Hitchcock, Keya Paha, Keith, Lincoln, Rock, Thurston and Wayne Counties. Sexual forms first detected in Greeley and Howard Counties in 1960. (Calkins). WISCONSIN - Decrease continues; in field where weekly observations made, averages were 2 per sweep November 26, 19 per sweep November 19 and 30 per sweep November 12. Populations still 6, 43 and 75 per sweep in adjacent field on respective dates. No alatae observed; apterous oviparae still developing and laying eggs. Few nymphs present. Egg numbers decreased in one field, probably due to breakage of apical foliage and stems. Number of eggs in different stand showed very slight increase; numbers on new seedling alfalfa increased from average of 5.7 to 7.5 per stem. (Wis. Ins. Sur.).

SWEETCLOVER APHID (Therioaphis riehmi) - WISCONSIN - Numbers decreased noticeably; present as apterous oviparae. Alates not observed. (Wis. Ins. Sur.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Apparent buildup in barley fields in Artesia and Cottonwood Creek areas, Eddy County; ranged 10-20 per linear foot. (N. M. Coop. Rpt.). OKLAHOMA - Light, scattered infestations noted in Payne, Kay and Noble Counties; counts fewer than 5 per linear foot. Activity reported in Pawnee, Muskogee, Kingfisher and Grady Counties. (Okla. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Heavy in barley fields in Artesia area, Eddy County. (N. M. Coop. Rpt.). VIRGINIA - Possibly this species, severe on barley throughout Middlesex County. (Tarpley, Edwards; Nov. 21). MARYLAND - Moderate on barley at Faulkner, Charles County. (U. Md., Ent. Dept.; Nov. 19).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - OKLAHOMA - Light in scattered areas of Kay and Noble Counties; ranged from 15 per linear foot to 50-75 per linear foot in one field in Kay County. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Generally common but light numbers noted in fields checked in Payne, Noble and Kay Counties. Reproduction noted in some fields. Light also in Kingfisher County. (Okla. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - OHIO - Populations dropped considerably over past few weeks; 2 adults per 50 sweeps noted in field of red clover near Bucyrus, Crawford County. (Lyon).

POTATO LEAFHOPPER (Empoasca fabae) - WISCONSIN - Populations collapsed; occasional adult observed. (Wis. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - NEW MEXICO - Adults extremely abundant in alfalfa fields near Tome, Valencia County. (N. M. Coop. Rpt.).

BEET ARMYWORM (Spodoptera exigua) - CALIFORNIA - Medium in field peas in Guadalupe, Santa Barbara County. (Cal. Coop. Rpt.).

ALFALFA WEEVIL (Hypera postica) - VIRGINIA - Larvae caused light damage to field of alfalfa in Marion, Smyth County. (Eller, Nov. 19).

A SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata tenella) - NEW MEXICO - Adults ranged 20-80 per 100 sweeps in alfalfa fields at Belen, Valencia County. (N. M. Coop. Rpt.).

GRASSHOPPERS - MONTANA - Egg-pod survey in areas of previously heavy adult populations show very few egg pods in Glacier, Prairie, Cascade, Carter, Richland and Dawson Counties. (PPC, West. Reg., Oct. Rpt.). NEW MEXICO - Melanoplus sp. ranged 6-20 per sweep in alfalfa fields in Los Lunas and Belen areas, Valencia County, and Albuquerque, Bernalillo County. (N. M. Coop. Rpt.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Light in scattered areas of Noble and Kay Counties. First reported activity of season. (Okla. Coop. Sur.).

FRUIT INSECTS

WOOLLY APPLE APHID (Eriosoma lanigerum) - OHIO - Light on untreated apple orchard near Marion, Marion County; believed moderate to heavy earlier in season. (Lyon).

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - ALABAMA - High infestation on peach trees in Dog River area, Mobile County. (Hagler, Buttram et al.).

POWDER-POST BEETLES - ALABAMA - Appearing in large numbers on dead and dying plum trees in Jefferson, Morgan, Lee and other counties in State. (Hagler, Buttram et al.).

SAP BEETLES (Carpophilus spp.) - CALIFORNIA - C. humeralis and C. hemipterus medium in persimmon fruit in El Cajon, San Diego County. (Cal. Coop. Rpt.).

WALNUT HUSK FLY (Rhagoletis completa) - UTAH - Damage conspicuous at Tooele, Tooele County, to English walnuts in particular. (Knowlton).

HICKORY SHUCKWORM (Laspeyresia caryana) - ARKANSAS - Light on pecans in Sevier and Crawford Counties. Moderate on nuts in Hempstead County and very heavy on nuts in Miller County. (Ark. Ins. Sur.).

PECAN WEEVIL (Curculio caryae) - ARKANSAS - Inspections of 2 lots of pecans from Sevier County showed no infestation in one, and 5 percent in other. Two lots from Crawford County showed 13.8 and 24.1 percent infestations. (Ark. Ins. Sur.).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - First specimen of this season, a gravid female, trapped November 12 in 67-acre grove of grapefruit and orange near Roma, Starr County. This is approximately 3 weeks earlier than first specimen taken last season on December 6, 1962. Grove has good fruit crop, none of which has been harvested. (PPC).

TRUCK CROP INSECTS

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Larvae damaged 5-acre field of sweetpotatoes during growing season; crop unfit for sale and destroyed. (Oates, Fairley).

TOMATO FRUITWORM (Heliothis zea) - ARIZONA - Infestations still occurring in lettuce fields of Yuma, Maricopa and Pinal Counties; damage light to moderate in most areas. Controls continue. (Ariz. Coop. Sur.).

FALL ARMYWORM (Laphygma frugiperda) - ARIZONA - Damage light to moderate in many lettuce fields in Maricopa and Pinal Counties; controls continue necessary. (Ariz. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Causing considerable damage to lettuce in Maricopa and Pinal Counties; controls continue necessary. (Ariz. Coop. Sur.). ALABAMA - Medium, locally in Baldwin County on cabbage. (Fairley).

A STINK BUG (Microporus obliquus) - CALIFORNIA - Heavy in volunteer sweetpotatoes; nymphs and adults infesting soil in Stanton, Orange County. (Cal. Coop. Rpt.).

TURNIP APHID (Hyadaphis pseudobrassicae) - ALABAMA - Heavy on turnips in isolated truck crop farm in Baldwin County. (Fairley).

AN APHID (Pentatrichopus thomasi) - MARYLAND - Common on new growth of young strawberry planting at Glendale, Prince Georges County. (U. Md., Ent. Dept., Nov. 19).

COTTON INSECTS

PINK BOLLWORM (Pectinophora gossypiella) - OKLAHOMA - Lint-cleaner inspections negative in Harmon and Roger Mills Counties; positive collections made in Beckham, Custer, Dewey, Grady, Jackson, Muskogee and Washita Counties. (Okla. Coop. Sur.).

BOLLWORMS (Heliothis spp.) - ARKANSAS - Larval collections made in July in Chicot County determined 30 H. zea and one H. virescens. (Ark. Ins. Sur.).

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Two-bushel sample of gin trash from Macon County revealed 23 adults; 1-bushel sample from Clay County, where local farmers insisted no weevils appeared last season, revealed 205 live specimens. Trash from other nearby counties shows about same number of weevils in hibernation in piles of gin trash at cotton gins. (Barwood).

THURBERIA WEEVIL (Anthonomus grandis thurberiae) - ARIZONA - Infestation of what is probably this species found south of Stanfield, Pinal County; light numbers also found in areas of Pima County. Infestations found in area on southeastern edge of Yuma County. (Ariz. Coop. Sur.).

COTTON APHID (Aphis gossypii) - ARIZONA - Building up on green cotton plants and other hosts in Yuma area. (Ariz. Coop. Sur.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

BARK BEETLES (Dendroctonus spp.) - CALIFORNIA - D. brevicomis and D. valens damaging ponderosa pine in 600-acre stand in Cobb Valley and small acreage in summer home area in Whispering Pines, Lake County. (D. Shaw, D. Woods, CDF). Heavy adult flights of D. brevicomis observed in Oakhurst area, Madera County, on Sierra National Forest. Adult D. brevicomis coming from ponderosa pine in area. Quite severe in Tehipiti Valley, Fresno County, a highly scenic area under consideration for National Park status. Callow adults of D. monticolae well advanced in sugar pine and some full adult stage ready to fly in Bass Lake area, Sierra National Forest; broods late this year. (W. Herbolsheimer, USFS). ALABAMA - Numerous reports of D. terebrans noted in Mobile where pest killed pine trees. Considerable damage to small groups of pines in forests and numerous ornamental specimens killed this season in State. (Seibels et al.).

AN ENGRAVER BEETLE (Ips sp.) - CALIFORNIA - Heavy buildup in logging slash of ponderosa pine in Cecil Creek area, Klamath National Forest. (L. H. Thornton, USFS).

A JUNIPER TWIG MOTH (Periploca nigra) - CALIFORNIA - Larvae heavy in juniper in Mill Valley, Marin County. (Cal. Coop. Rpt.).

A PINE RESIN MIDGE (Retinodiplosis inopis) - CALIFORNIA - Infestations extensive in ponderosa pine at Sawyers Bar in Klamath National Forest. (N. E. Dircksen, USFS).

A CONIFER SAWFLY (Neodiprion sp.) - CALIFORNIA - Larval specimens collected in Fenner Saddle area, Angeles National Forest; caused severe defoliation of 2 pinyon pines in October. Area to be under surveillance in 1964 for adult specimens for positive determination. (J. Pierce, D. Albrecht, USFS).

GYPSY MOTH (Porthetria dispar) - Adults captured in traps outside of regulated area in VERMONT, one each in Hyde Park and Morristown, Lamoille County. One egg cluster removed from shipment of logs at Castleton consigned for Canada. In MASSACHUSETTS, 1-20 egg clusters found in peripheral areas of 6 nurseries. A few egg clusters found and treated in 5 evergreen bough lots and at 3 lumberyards 260 egg clusters found and treated. Four egg clusters removed from shipment of collected stock for movement out of State. in CONNECTICUT, 75 growing areas involving 1,194 acres of nursery stock and 889 acres of periphery scouted. Total of 175 egg clusters found and treated in peripheral areas; 1,479 collected plants inspected with 8 plants found infested with 264 egg clusters. Scouting of regulated areas on Long Island, NEW YORK, continued; 2 egg clusters found to date in peripheral area outside of nursery in Nassau County and 1-5 egg masses found in peripheral area outside of 4 establishments in Suffolk County. Regulatory surveillance continued in northern NEW JERSEY regarding intrastate movement of materials in vicinity of positive trapsites. (PPC. East. Reg., Oct. Rpt.).

WOOLLY ALDER APHID (Prociphilus tessellatus) - ALABAMA - Extremely large masses present an almost artificial sight; covering 50-90 percent of limb surface of alders along banks of 75-acre lake in Macon County. Present all season but now more noticeable with fewer leaves. (McQueen).

WILLOW BEAKED-GALL MIDGE (Phytophaga rigidae) - MARYLAND - Galls with larvae found on pussy willow at Pasadena, Anne Arundel County. (U. MD., Ent. Dept. Nov. 18).

A GEOMETRID MOTH (Coryphista meadii) - CALIFORNIA - Medium on mahonia nursery stock in Modesto, Stanislaus County. (Cal. Coop. Rpt.).

AN OLETHREUTID MOTH (Crocidosema plebeiana) - CALIFORNIA - Medium on hibiscus flowers in Lemon Grove, San Diego County. (Cal. Coop. Rpt.).

A SKIPPER (Erynis tristis) - CALIFORNIA - Medium and tying leaves of holly oak in Modesto, Stanislaus County; det. by C. D. MacNeil. (Cal. Coop. Rpt.).

APHIDS - DELAWARE - Macrosiphum euphorbiae adults common on roses locally in New Castle County. (Burbutis). OHIO - Myzus persicae heavy on snapdragons in greenhouse at Bucyrus, Crawford County. (Lyon). OKLAHOMA - Several species heavy on ornamental shrubs in Greer County; activity noted in other areas. (Okla. Coop. Sur.). CALIFORNIA - Micromyzus formosanus heavy on chives in San Francisco County. Neothomasia populicola heavy on poplar trees in West Sacramento, Yolo County. Toxoptera aurantii medium on pittosporum nursery stock in Visalia, Tulare County. (Cal. Coop. Rpt.).

COCCIDS - NEW MEXICO - Unaspis euonymi moderately heavy and damaging euonymus at Hobbs, Lea County. (N. M. Coop. Rpt.). ALABAMA - Eriococcus azaleae quite prevalent in Mobile County area; observed at several locations. (Seibels). VIRGINIA - U. euonymi infesting euonymus at a location in Richmond. (Rowell).

MARYLAND - Aspidiotus perniciosus moderate on ornamental cherries at University Park, Prince Georges County. (U. Md., Ent. Dept.).

CRICKETS (Orocharis spp.) - ALABAMA - Continue to feed on and destroy beauty and value of camellias in Dog River area, Mobile County. (Seibels).

SPIDER MITES - OHIO - Tetranychus telarius caused moderate to heavy damage to chrysanthemums in Bucyrus greenhouse, Crawford County; controls underway. (Lyon). CALIFORNIA - Oligonychus subnudus medium on Italian cypress nursery stock in El Cajon, San Diego County. (Cal. Coop. Rpt.).

AN ERIOPHYID MITE (Trisetacus quadrisetus) - CALIFORNIA - Heavy on foliage at base of scales on juniper in nursery stock in San Diego, San Diego County. (Cal. Coop. Rpt.).

CYCLAMEN MITE (Steneotarsonemus pallidus) - CALIFORNIA - Medium on Aralia seiboldi nursery stock in San Mateo County. (Cal. Coop. Rpt.).

INSECTS AFFECTING MAN AND ANIMALS

MOSQUITOES - OKLAHOMA - Unidentified species heavy and annoying humans in Greer County area. (Okla. Coop. Sur.).

AN ASSASSIN BUG (Rasahus thoracicus) - CALIFORNIA - Populations light in Oroville, Butte County, and West Sacramento, Yolo County; reported biting people. Occurrence later than in previous years. (Cal. Coop. Rpt.).

FLEAS - MINNESOTA - Problem in Minneapolis-St. Paul area; biting for number of weeks. (Minn. Ins. Rpt.).

CATTLE LICE - OKLAHOMA - First activity of season reported from Choctaw County on livestock. (Okla. Coop. Sur.). UTAH - Additional beef cattle treated in Tooele, Garfield and Millard Counties; 3,500 being dipped in Emery County and 2,000 treated in Juab County. (Knowlton).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate to heavy on hogs in Bryan County. (Okla. Coop. Sur.).

EAR TICK (Otobius megnini) - OKLAHOMA - Infestations of 3 per animal noted on livestock in Washita County. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - OHIO - Heavy on 2 Leghorn hens at poultry house in Morrow County; examination of other hens revealed noneconomic infestations. (Lyon).

A BROWN SPIDER (Loxosceles reculsa) - ILLINOIS - Collected about one month ago in kitchen cabinets in home at Valmeyer, Monroe County; this is a new county record. (Ill. Ins. Rpt.).

HOUSEHOLD AND STRUCTURAL INSECTS

FACE FLY (Musca autumnalis) - MARYLAND - Numerous in attic of building in southern Montgomery County. (U. Md., Ent. Dept., Nov. 19).

CLUSTER FLY (Pollenia rudis) - MICHIGAN - Reports of adults causing annoyance in homes unseasonably low recently; individual problem reported from northern area. (Janes). UTAH - This species and some blow flies noted in schoolroom in Logan, Cache County. (Knowlton).

OLD-HOUSE BORER (Hylotrupes bajulus) - ALABAMA - Infested residence in Mobile area. (Seibels). This is first ARS record for Mobile County.

FURNITURE CARPET BEETLE (Anthrenus flavipes) - MARYLAND - Larvae found in home at University Park, Prince Georges County. (U. Md., Ent. Dept.).

A GRASS BUG (Arhyssus scutatus) - CALIFORNIA - Infestations continue active and reports from Placerville area, El Dorado County, indicate heavy infestation in residence. (Cal. Coop. Rpt.).

BLACK CARPENTER ANT (Camponotus pennsylvanicus) - MARYLAND - Specimens noted around wooden porch of home in Takoma Park, Montgomery County. (U. Md., Ent. Dept., Nov. 18).

MILLIPEDS - DELAWARE - Several nuisance infestations noted in homes in areas of New Castle County. (MacCreary).

STORED-PRODUCT INSECTS

POTATO TUBERWORM (Gnorimoschema operculella) - MICHIGAN - Adults collected in potato storeroom in Monroe County at rate of 41 per night for 5 nights with single blacklight trap. Potatoes held at 60° F. to be used for potato chips. (Wells, Laser).

BENEFICIAL INSECTS

FLOWER FLIES - ALABAMA - Prodigious numbers of adults in all areas of Mobile County; at least 20 kinds swarmed about chrysanthemums in full bloom at Bellingrath Gardens. (Seibels). Several species quite plentiful in central part of State; larvae feeding on aphids on flowers, pines, collards, turnips and other plants. (Seibels et al.).

A DAMSEL BUG (Nabis ferus) - OHIO - Most abundant beneficial insect collected in sweeping throughout central area in red clover fields. (Lyon).

Parasites of European Corn Borer in South Dakota - Examination of 214 larvae of Ostrinia nubilalis from 2 farms in Brookings County showed 6 larvae (2.8 percent) parasitized by a eulophid (Sympiesis viridula) released in summer of 1962. An ichneumon (Horogenes punctorius) parasitized 37 larvae (17.3 percent) and a braconid (Macrocentrus gifuensis) parasitized 45 larvae (21 percent). (Hintz).

MISCELLANEOUS INSECTS

WHITE-FRINGED BEETLES (Graphognathus spp.) - VIRGINIA - Total of 44 specimens collected from 11 locations in Norfolk and 19 specimens from 8 locations in Virginia Beach. (PPC, East. Reg., Oct. Rpt.).

EUROPEAN CHAFER (Amphimallon majalis) - Controls continued in Hudson County, NEW JERSEY; all work on Union City and Jersey City completed except the Palisades and small section of railroad in Jersey City. Controls started in Erie, PENNSYLVANIA, September 30. (PPC, East. Reg., Oct. Rpt.).

A DERMESTID BEETLE - ARKANSAS - Larval forms taken from cricket feed in October in Crittenden County. (Ark. Ins. Sur.).

A POWDER-POST BEETLE (Trogoxylon prostomoides) - CALIFORNIA - Larvae heavy and adults noted infesting bamboo basket in Oroville, Butte County. (Cal. Coop. Rpt.).

LESSER MEALWORM (Alphitobius diaperinus) - ARKANSAS - Adults collected from cricket feed in Crittenden County. (Ark. Ins. Sur.).

BLACK CARPENTER ANT (Camponotus pennsylvanicus) - OHIO - Many saw logs observed full of galleries at sawmill near Upper Sandusky, Wyandot County; heavy populations of sexual and worker casts observed in galleries. Unusually serious economic damage occurred to many saw logs this past season. (Lyon).

A SNAIL (Vallonia pulchella) - CALIFORNIA - Medium locally in soil in Sacramento, Sacramento County; infestations occurring in greater numbers this year. Rain caused snails to mass on sidewalks and driveways. (Cal. Coop. Rpt.).

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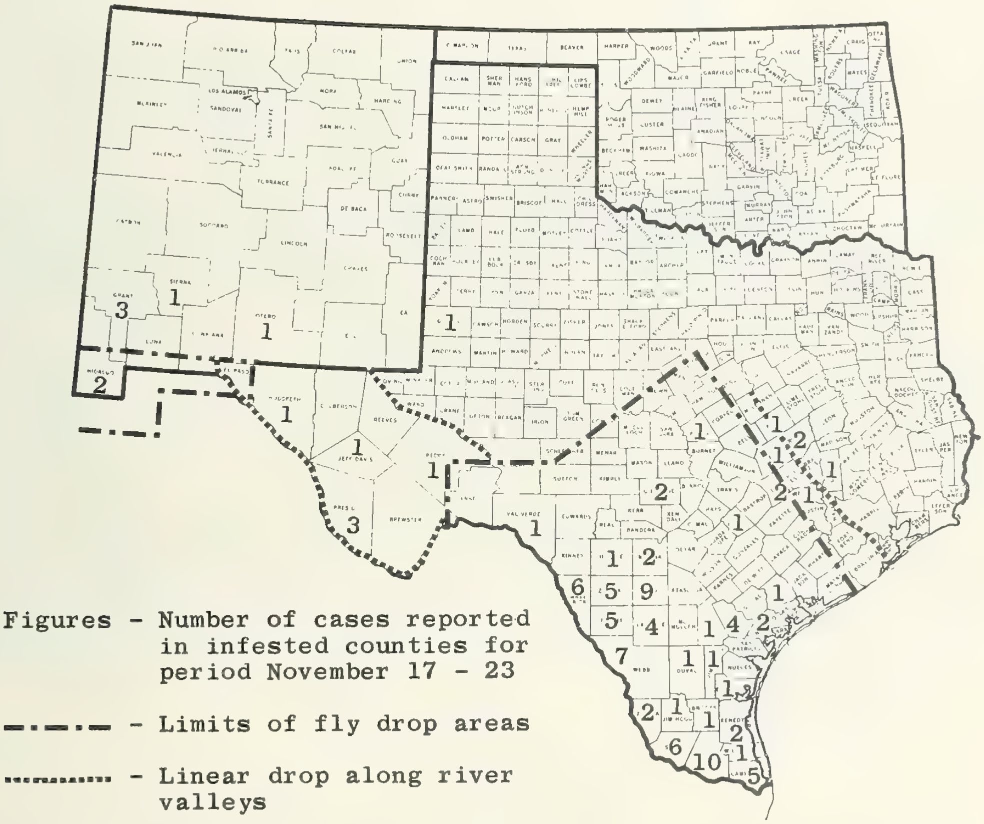
STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period November 17 - 23, a total of 101 confirmed cases, including 2 of unknown origin, were found in 39 counties in TEXAS; this is a decrease of 99 cases over previous period. There were 7 confirmed screw-worm cases reported from 4 counties in NEW MEXICO. Colder weather is being reported in New Mexico with a corresponding decrease in screw-worm populations. Snow and freezes are occurring in higher elevations. A total of 137,510,650 sterile flies was released during the period. (Anim. Dis. Erad. Div.).


Figures - Number of cases reported in infested counties for period November 17 - 23
- Limits of fly drop areas
- Linear drop along river valleys

LIGHT TRAP COLLECTIONS

	Temperature F°	Precipitation	Type of trap *	Agrotis ipsilon (black cutworm)	Carpocapsa pomonella (codling moth)	Chorizagrotis auxiliaris (army cutworm)	Estigmene acrea (salt-marsh caterpillar)	Faronta diffusa (wheat head armyworm)	Feltia subterranea (granulate cutworm)	Heliothis virescens (tobacco budworm)	Heliothis zea (bollworm, corn earworm)	Laphygma frugiperda (fall armyworm)	Loxostege commixtalis (alfalfa webworm)	Loxostege similalis (garden webworm)	Loxostege sticticalis (beet webworm)	Ostrinia nubilalis (European corn borer)	Peridroma saucia (variegated cutworm)	Prodenia ornithogalli (yellow-striped armyworm)	Protoparce quinquemaculata (tomato hornworm)	Protoparce sexta (tobacco hornworm)	Pseudaletia unipuncta (armyworm)	Spodoptera exigua (beet armyworm)	Trichoplusia ni (cabbage looper)	Major crop **
CALIFORNIA																								
Davis 11/23-29				1													2				15			misc.
MISSISSIPPI																								
Stoneville 11/22-28	29-77	2.13	MV	17					37		2	15					1				18	44		
Stoneville 11/22-28	29-77	2.13	BL	32					80		2	47					1	8			29	163	5	
SOUTH CAROLINA																								
Charleston 11/18-24	38-77	0.60	BL	45			0		10	0	2	0					6	7	0	0	55		1	
Charleston 11/27-12/1	30-73	0.90	BL	69			0		38	0	0	0					13	6	0	0	79		0	
TEXAS																								
Brownsville 11/21-26			5 BL	263			497		302	2	100	2008					234	12		12	1279		65	
Waco 11/23-29			BL	3			0		34	0	0	2					17	0			111	2	0	

* BL = blacklight; I = incandescent; MV = mercury vapor ; O = other

** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn; grain = small grains; leg. = legumes (unspecified); lett. = lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC = sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. = tomato.

HAWAIIAN INSECT NOTES

The following notes on Hawaii insect conditions were presented at the 695th meeting of the Hawaiian Entomological Society held November 4, 1963.

A SCARAB (Onthophagus sagittarius (F.)) - Approximately 10 specimens collected from cow dung in Manoa Valley, Oahu, July 24, 1963. This insect has not previously been reported from Hawaii, but was probably released with O. catta. (See CEIR 10(23):477). This constitutes a new record for the State. Det. by O. L. Cartwright. (D. M. Tsuda).

A PHYCITID MOTH (Ectomyelois ceratoniae (Zeller)) - Two larvae found infesting seeds of Barringtonia sp. from Oahu on March 10, 1963, by J. Toba. Determination confirmed by D. M. Weisman. This constitutes a new host record for this insect. (E. H. Davidson, E. S. Shiroma).

A PHYCITID MOTH (Ephestiodes gilvescentella Ragonot) - An adult was taken in a blacklight trap at Olinda, Maui, by E. Bonsey. Det. by W. D. Duckworth. Zimmerman (1958: Insects of Hawaii 8:377) records this species as occurring on the islands of Oahu and Molokai. This constitutes a new record for the island of Maui. (E. H. Davidson, E. S. Shiroma).

A LYGAEID BUG (Graptostethus manillensis (Stål)) - On August 31, 1963, a specimen was intercepted from box of assorted cut flowers from Hilo, Hawaii, enroute to the mainland by R. Nave. Although previously reported from the islands of Kauai, Oahu, Maui and Niihau, this interception constitutes a new record for the island of Hawaii. (E. H. Davidson, E. S. Shiroma).

A REDUVIID BUG (Polididus armatissimus Stål) - A specimen was taken August 29, 1963, at a light in Foster Village, Oahu, by J. Gayden. This is third locality record of this species on Oahu. It was first reported by Dr. C. R. Joyce in October 1961 as being taken at Aina Haina and at Kailua. This species was first reported from the State on the island of Hawaii by LeMar Chilson in 1953. (E. H. Davidson, E. S. Shiroma).

A PUNCTURE-VINE WEEVIL (Microlarinus lypriformis (Wollaston)) - The work of this stem-infesting species was exhibited. This weevil, the second species introduced for the biological control of puncture-vine (Tribulus terrestris and T. cistoides), was sent from California by Noel Krauss and released at Kekeha, Kauai, on July 8, 1963. Much damage to the native puncture-vine (T. cistoides) has occurred since release of the weevil. (S. Au, C. J. Davis).

A PARASITIC ENCYRTID (Exoristobia philippinensis Ashmead) - Reared from puparia of Trichopoda pennipes F. (a parasitic tachina fly) at the Honaunau Insectary, Kona, recently. This is first record of this hyper-parasite from island of Hawaii. The species was previously reported from Oahu by J. W. Beardsley and C. J. Davis. (C. J. Davis, E. Yoshioka).

A HELIODINID MOTH (Schreckensteinia festaliella Hubner) - This leaf-skeletonizing species, introduced from Oregon for control of blackberry, was approved for release by the Board of Agriculture and Forestry at its meeting on October 25, 1963, after extensive host range tests indicated the species was host specific. First releases made the following week in Olinda, Maui. S. festaliella is of European origin. (C. J. Davis).

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Corn for Grain (Commodity) IN Ohio (State or District), DURING 1962 (Year)

A. Pest or pest complex Corn rootworms, cutworms - wireworms, corn leaf aphid, chinch bug, armyworm, European corn borer, thrips, flea beetles, billbugs

B. Number of acres[a] produced (From CRS) No. 2,663,000

C. Average yield per acre[a] (From CRS) Units/ 76 bu.

D. Price[b] per unit (bu.)[c] (From CRS) $/ 1.04

E. Acres[a] needing control No. 266,300 (10%)

F. Acres[a] treated No. 399,450 (15% over treatment)

G. Reduction due to not treating where needed:

H. Loss in yield, percent % 6

I. Loss in yield, units per acre[a], C x H Units/ 4.56 bu.

J. Loss in yield, $ per acre[a], D x I $/ 4.74

K. Loss in quality, $ per --[a] $/ --

L. Yield loss for all --[a], (E-F) x I Units --

M. Control cost, $ per acre[a] $/ 3.00

N. Control cost for all acres[a], F x M $ 1,198,350

O. Yield loss for all --[a], (E-F) x J $ --

P. Quality loss for all --[a], (E-F) x K $ --

Q. Combined control cost and losses, N + O + P $ 1,198,350

Comment: Corn yields in 1962 reached a record high of 76 bushels per acre due in part to adequate rains at critical times, increased use of fertilizer, heavier plant population and a favorable planting season.

[a] Acres, head of cattle or other producing units used by Crop Reporting Service.

[b] Season average price per unit as given by CRS (describe basis).

[c] Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Wheat (Commodity) IN Ohio (State or District) DURING 1962 (Year)

A.	Pest or pest complex Hessian fly, sawflies, wheat jointworm, chinch bug, armyworm	
B.	Number of acres[a] produced (From CRS)	No. 1,209,000
C.	Average yield per acre[a] (From CRS)	Units/ 32 bu.
D.	Price[b] per unit (bu.)[c] (From CRS)	$/ 1.97
E.	Acres[a] needing control	No. 24,180 (2%)
F.	Acres[a] treated	No. 1,209 (0.1%)
G.	Reduction due to not treating where needed:	22,971
	H. Loss in yield, percent	% 8
	I. Loss in yield, units per acre[a], C x H	Units/ 2.56 bu.
	J. Loss in yield, $ per acre[a], D x I	$/ 5.04
	K. Loss in quality, $ per --[a]	$/ --
L.	Yield loss for all acres[a], (E-F) x I	Units 58,806 bu.
M.	Control cost, $ per acre[a]	$/ 2.00
N.	Control cost for all acres[a], F x M	$ 2,418
O.	Yield loss for all acres[a], (E-F) x J	$ 115,774
P.	Quality loss for all --[a], (E-F) x K	$ --
Q.	Combined control cost and losses, N + O + P	$ 118,192

Comment: Adequate rainfall came in October of 1961 for the fall sown grains, but heavy rains in January with subsequent freezing temperature resulted in the smothering of part of the crop, which gave higher losses of acreage than usual. Timely rainfall in late May resulted in excellent development of the heads. The yield of 32 bushels per acre was the second highest on record.

[a] Acres, head of cattle or other producing units used by Crop Reporting Service.

[b] Season average price per unit as given by CRS (describe basis).

[c] Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Oats (Commodity) IN Ohio (State or District) DURING 1962 (Year)

A. Pest or pest complex Aphids, stalk borers, grasshoppers

B. Number of acres[a] produced (From CRS) No. 833,000

C. Average yield per acre[a] (From CRS) Units/ 58 bu.

D. Price[b] per unit (bu.)[c] (From CRS) $/ .64

E. Acres[a] needing control No. 8,330 (1%)

F. Acres[a] treated No. no treatment

G. Reduction due to not treating where needed: 8,330

H. Loss in yield, percent % 6

I. Loss in yield, units per acre[a], C x H Units/ 3.48 bu.

J. Loss in yield, $ per acre[a], D x I $/ 2.23

K. Loss in quality, $ per --[a] $/ --

L. Yield loss for all acres[a], (E-F) x I Units 28,988 bu.

M. Control cost, $ per acre[a] $/ 2.00

N. Control cost for all --[a], F x M $ --

O. Yield loss for all acres[a], (E-F) x J $ 18,576

P. Quality loss for all --[a], (E-F) x K $ --

Q. Combined control cost and losses, N + O + P $ 18,576

Comment: Extremely favorable weather and field conditions allowed oat planting to be virtually completed by the end of April. The yield per acre averaged 58 bushels, second only to the record 1960 yield of 63 bushels per acre.

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Soybeans for Beans (Commodity) IN Ohio (State or District) DURING 1962 (Year)

A.	Pest or pest complex	Grasshoppers, locust leaf miner, blister beetles, seed-corn maggot, Mexican bean beetle
B.	Number of acres[a] produced (From CRS)	No. 1,808,000
C.	Average yield per acre[a] (From CRS)	Units/ 25.5 bu.
D.	Price[b] per unit (bu.)[c] (From CRS)	$/ 2.35
E.	Acres[a] needing control	No. 27,120 (1.5%)
F.	Acres[a] treated	No. 1,808 (0.1%)
G.	Reduction due to not treating where needed:	25,312
	H. Loss in yield, percent	% 15
	I. Loss in yield, units per acre[a], C x H	Units/ 3.83 bu.
	J. Loss in yield, $ per acre[a], D x I	$/ 9.00
	K. Loss in quality, $ per --[a]	$/ --
L.	Yield loss for all acres[a], (E-F) x I	Units 96,945 bu.
M.	Control cost, $ per acre[a]	$/ 2.50
N.	Control cost for all acres[a], F x M	$ 4,520
O.	Yield loss for all acres[a], (E-F) x J	$ 227,808
P.	Quality loss for all --[a], (E-F) x K	$ --
Q.	Combined control cost and losses, N + O + P	$ 232,328

Comment: Below normal soil moisture throughout the growing season resulted in a lower soybean yield for Ohio in 1962.

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a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Hay (All) (Commodity) IN Ohio (State or District), DURING 1962 (Year)

A. Pest or pest complex Potato leafhopper, meadow spittlebug, clover root borer, lesser clover leaf weevil, pea aphid, plant bugs, sweetclover weevil, clover leaf weevil, grasshoppers, alfalfa weevil

B.	Number of acres[a] produced (From CRS)	No. 1,897,000
C.	Average yield per acre[a] (From CRS)	Units/ 1.66 tons
D.	Price[b] per unit (ton)[c] (From CRS)	$/ 26.00
E.	Acres[a] needing control	No. 853,650 (45%)
F.	Acres[a] treated	No. 284,550 (15%)
G.	Reduction due to not treating where needed:	569,100
	H. Loss in yield, percent	% 20
	I. Loss in yield, units per acre[a], C x H	Units/ 0.33 ton
	J. Loss in yield, $ per acre[a], D x I	$/ 8.58
	K. Loss in quality, $ per --[a]	$/ --
L.	Yield loss for all acres[a], (E-F) x I	Units 187,803 tons
M.	Control cost, $ per acre[a]	$/ 2.80
N.	Control cost for all acres[a], F x M	$ 796,740
O.	Yield loss for all acres[a], (E-F) x J	$ 4,882,878
P.	Quality loss for all --[a], (E-F) x K	$ --
Q.	Combined control cost and losses, N + O + P	$ 5,679,618

Comment: An unusually dry summer resulted in a yield of 1.66 tons of hay per acre in 1962. The low yield combined with the smallest acreage harvested since 1875 resulted in the lowest production of hay on record since 1936.

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Sugar Beets (Commodity) IN Ohio (State or District) DURING 1962 (Year)

A. Pest or pest complex Wireworms - cutworms, flea beetles, leaf miners, aphids, blister beetles, grasshoppers

B.	Number of acres[a] produced (From CRS)	No. 25,000
C.	Average yield per acre[a] (From CRS)	Units/ 16.6 tons
D.	Price[b] per unit (ton)[c] (From CRS)	$/ 11.50
E.	Acres[a] needing control	No. 2,500 (10%)
F.	Acres[a] treated	No. 250 (1%)
		2,250
G.	Reduction due to not treating where needed:	
	H. Loss in yield, percent	% 5
	I. Loss in yield, units per acre[a], C x H	Units/ 0.83 ton
	J. Loss in yield, $ per acre[a], D x I	$/ 9.54
	K. Loss in quality, $ per --[a]	$/ --
L.	Yield loss for all acres[a], (E-F) x I	Units 1,867 tons
M.	Control cost, $ per acre[a]	$/ 2.50
N.	Control cost for all acres[a], F x M	$ 625
O.	Yield loss for all acres[a], (E-F) x J	$ 21,465
P.	Quality loss for all --[a], (E-F) x K	$ --
Q.	Combined control cost and losses, N + O + P	$ 22,090

Comment:

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

ESTIMATED LOSSES AND PRODUCTION COSTS ATTRIBUTED TO INSECTS AND RELATED ARTHROPODS

ATTACKING Tobacco (Commodity) IN Ohio (State or District) DURING 1962 (Year)

A.	Pest or pest complex Hornworms, flea beetles, cutworms - slugs - scarab larvae, grasshoppers, corn earworm, aphids	
B.	Number of acres[a] produced (From CRS)	No. 10,600
C.	Average yield per acre[a] (From CRS)	Units/ 1,700 lbs.
D.	Price[b] per unit (lb.)[c] (From CRS)	$/ 0.577
E.	Acres[a] needing control	No. 5,300 (50%)
F.	Acres[a] treated	No. 1,272 (12%)
G.	Reduction due to not treating where needed:	4,028
	H. Loss in yield, percent	% 18
	I. Loss in yield, units per acre[a], C x H	Units/ 306 lbs.
	J. Loss in yield, $ per acre[a], D x I	$/ 176.56
	K. Loss in quality, $ per --[a]	$/ --
L.	Yield loss for all acres[a], (E-F) x I	Units 1,232,568
M.	Control cost, $ per acre[a]	$/ 5.50
N.	Control cost for all acres[a], F x M	$ 6,996
O.	Yield loss for all acres[a], (E-F) x J	$ 711,183.68
P.	Quality loss for all --[a], (E-F) x K	$ --
Q.	Combined control cost and losses, N + O + P	$ 718,179.68

Comment:

a. Acres, head of cattle or other producing units used by Crop Reporting Service.

b. Season average price per unit as given by CRS (describe basis).

c. Bushels, boxes, tons or other marketing units used by CRS; show which in ( ).

Submitted by William F. Lyon

Date 11-22-63

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

SAFFLOWER FRUIT FLY (*Acanthiophilus eluta* (Meigen))

Economic Importance: The safflower fruit fly (*Acanthiophilus eluta* (Meigen) (= *A. helianthi* (Rossi)) is historically one of the most important pests of safflower in the Old World, and is readily found breeding on native composites over most of its range. It has been reported as the most important pest of safflower in southeastern U.S.S.R., and up to 90 percent of the fruits become infested in Rumania. About the middle of March 1939, larvae of *A. eluta* were found seriously damaging the flower heads of some varieties of safflower in experimental plots at New Delhi, India. Serious damage was reported to both early and late-sown varieties, the infestation being as high as 90 percent. Safflower was introduced into the south of France as an oilseed crop in 1942, but was so severely attacked by this fruit fly that by 1953 it had almost ceased to be grown. Losses of 40-50 percent were observed at Tarascon in 1958, and 90-95 percent of the flower heads of an experimental crop at Montfavet were attacked in 1959.

The maggots of *A. eluta* feed upon the essential organs of the florets and even bore into the torus (receptacle) of safflower. The infested bud begins to rot and the fluid thus produced oozes out from its apical portion and gives it a damp appearance. Furthermore, in advanced stage of attack, the florets become black, presenting an emaciated and withered appearance.

In 1961, safflower, as an oil crop, was being grown on about 420,000 acres in the United States, about half of which was in California. By 1962, production was expected to increase to about one-half million acres. Based on the rapidly increasing safflower acreage, *A. eluta* may be a potential threat if introduced in the United States.

Distribution: Ranges from England and the Canary Islands across southern and central Europe and North Africa (from Morocco to the Sudan, Ethiopia (Eritrea) and Kenya) to Turkey, Israel, Iran, U.S.S.R., India, and the Northwest Himalayas.

Hosts: Recorded on safflower (*Carthamus tinctorius*), *C. lanatus*, centaurea (*Centaurea* spp.), bristlethistle (*Carduus* spp.), bull thistle (*Cirsium lanceolatum*), *Cnicus lanceolatus*, illyrian cottonthistle (*Onopordum illyricum*), *Leuzea conifera*, blessed milkthistle (*Silybum marianum*) and other wild hosts of the tribe Cynareae, Compositae.

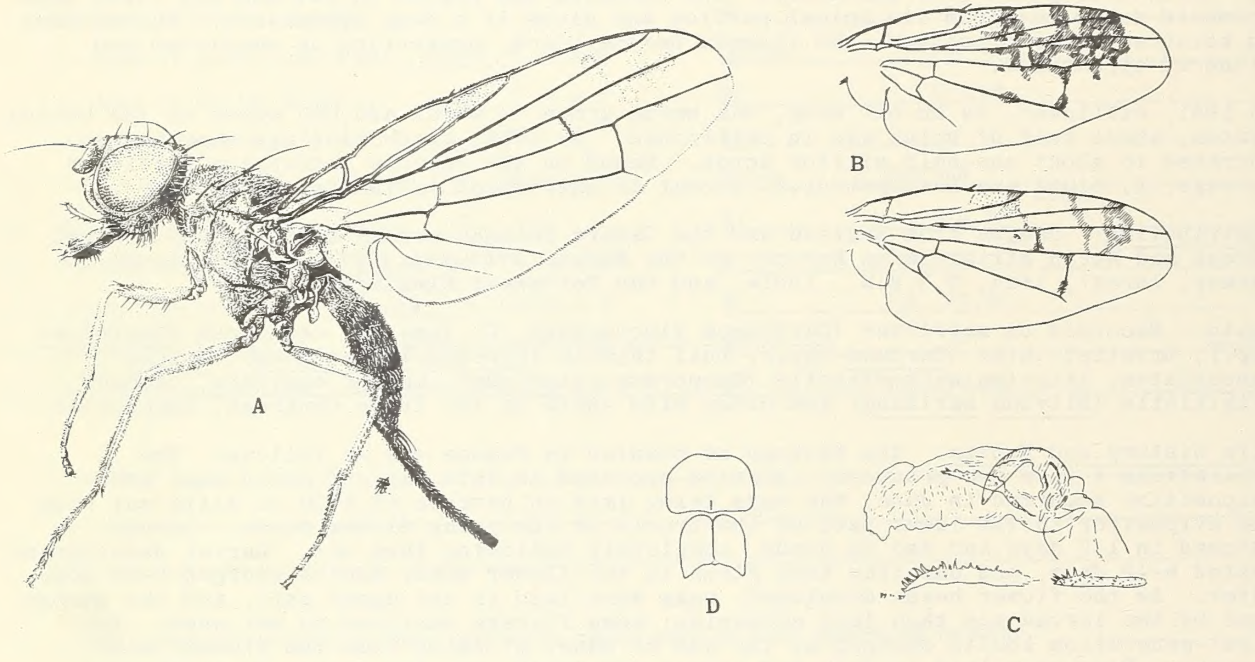
Life History and Habits: The biology as studied in France was as follows: Two generations a year are produced. Females appeared in late May and early June and oviposition occurred in June, the eggs being laid in batches of 6-20 in slits cut with the ovipositor in the lower part of the bracts of the young flower heads. Larvae hatched in 1-2 days and fed in heads, completely hollowing them out. Larval development lasted 8-12 days, and pupation took place in the flower head; adults emerged 9-10 days later. As the flower heads developed, eggs were laid in the upper part, and the damage done by the larvae was then less extensive; some florets survived to set seed. The first-generation adults emerged at the end of June, at which time the flowers were opening. Eggs were laid in July and larvae developed, but the damage by the second generation was relatively unimportant.

Earlier studies in India stated that the pest was very active during March, April and May in the field. Laboratory studies to determine the duration of the various stages (average of 5 readings) at maximum and minimum temperatures of 85.2° F. and 78.5° F., respectively, were made. The egg stage lasted 25 hours and larval and pupal stages 7 days each. In the safflower season, the fly completed 3 generations in 6 weeks, from the middle of March to the first week of May. Additional generations occur on wild hosts during the growing season.

Life history studies in U.S.S.R. by Rusanova (6), though incomplete, suggest that *A. eluta* may overwinter as an adult.

(Tephritidae, Diptera)

Description: LARVA - Full-grown stage 5 mm. long and 1.5 mm. wide; shape typical of tephritids. Anterior spiracles cup-shaped, margin of each spiracle being fringed with 6 oval lobes. Posterior spiracles almost reniform, each possessing 3 elongated oval slits which are notched at peripheral end. Inner walls of slits chitinized and fimbriated. In each inter-spiracular area, 1 to 4 very minute hyaline lanceolate processes present. Apical tooth of oral hooks curved and pre-apical tooth, which is smaller and less curved, directed downwards and somewhat backwards. PUPARIUM - 4.25 mm. long and 1.75 mm. wide; barrel-shaped and black with a metallic tinge. ADULT - Frons bare with trace of median stripe. Wing pattern reduced and variable, occasionally almost absent. Apical scutellar bristles about 0.3-0.4 times as long as basals. Coloration of body ash, with reddish-brown frons and light brown legs. Male smaller than female, which is about 6.5 mm. in length. Male - Sternite 4 wider than 5, which has a shallow indent and a distinctive, narrow median ridge on inner side, a slight ridge may appear on 4. Aedeagus vesica moderate, a large basal curved spine and a moderate setose rod. (Prepared in Survey and Detection Operations in cooperation with other ARS agencies.)



Figures of *Acanthiophilus eluta* (Meigen): A - Adult female. B - Wing, showing variable pattern. C - Aedeagi, showing variation of setulae on rod (small figures - Indian specimen (left) and African specimen (right)). D - Sternites 4 and 5 of male.

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Illustrations: Adult female from Feron and Vidaud; aedeagus, sternites and wing from Munro.

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